

תכנית האנרגיה ע"ש גרנד מתכבדת להזמין להרצאה סמינריונית שתינת ע"י:

אסף דאנה

התכנית הבין-יחידתית לאנרגיה

בנושא:

Dynamics of fracture relaxation during shale-oil and-gas production by hydraulic fracturing

Hydraulic fracturing for production of oil and gas from shale formations releases fluid waste, by-products that must be managed carefully to avoid significant harm to human health and the environment. These fluids are presumed to result from a variety of fracture relaxation processes, and are commonly referred to as 'flowback' and 'produced water', depending primarily on the time scale of their appearance. Here, a model is presented for investigating the dynamics of backflows caused by the elastic relaxation of a pre-strained medium, namely a model fracture network system: from a simple bifurcating system with fixed elastic properties to a power-law model that allows for a varying branching value, length distribution and varying elastic properties along the flow path. Finally, the model was extended to include permeable boundaries and to account for their influence on the system's dynamics. Early- and late-time asymptotic solutions are obtained for the model problems that agree well with numerical solutions. The developed framework may be useful for informing engineering design and environmental regulations.

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במסגרת עבודת מחקר לתואר מגיסטר

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הפקולטה להנדסה אזרחית וסביבתית